

#### § 58.30-5

but must meet the requirements of § 58.30-50.

[CGFR 68-82, 33 FR 18878, Dec. 18, 1968, as amended by CGD 73-254, 40 FR 40168, Sept. 2, 1975]

#### § 58.30-5 Design requirements.

(a) The requirements of part 56 are also applicable to piping and fittings in fluid power and control systems listed in § 58.30-1 of this part, except as modified herein. The designer should consider the additional pressure due to hydraulic shock and should also consider the rate of pressure rise caused by hydraulic shock.

(b) The system shall be so designed that proper functioning of any unit shall not be affected by the back pressure in the system. The design shall be such that malfunctioning of any unit in the system will not render any other connected or emergency system inoperative because of back pressure.

(c) Pneumatic systems with a maximum allowable working pressure in excess of 150 pounds per square inch shall be designed with a surge tank or other acceptable means of pulsation dampening.

(d) Each pneumatic system must minimize the entry of oil into the system and must drain the system of liquids.

[CGFR 68-82, 33 FR 18878, Dec. 18, 1968, as amended by CGFR 69-127, 35 FR 9980, June 17, 1970; CGD 73-254, 40 FR 40168, Sept. 2, 1975; CGD 83-043, 60 FR 24781, May 10, 1995; CGD 95-027, 61 FR 26001, May 23, 1996]

#### § 58.30-10 Hydraulic fluid.

(a) The requirements of this section are applicable to all fluid power transmission and control systems installed on vessels subject to inspection.

(b) The fluid used in hydraulic power transmission systems shall have a flashpoint of not less than 200 °F. for pressures below 150 pounds per square inch and 315 °F. for pressures 150 pounds per square inch and above, as determined by ASTM D 92 (incorporated by reference, see § 58.03-1), Cleveland "Open Cup" test method.

(c) The chemical and physical properties of the hydraulic fluid shall be suitable for use with any materials in the system or components thereof.

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(d) The hydraulic fluid shall be suitable for operation of the hydraulic system through the entire temperature range to which it may be subjected in service.

(e) The recommendations of the system component manufacturers and ANSI-B93.5 (Recommended Practice for the Use of Fire Resistant Fluids for Fluid Power Systems) shall be considered in the selection and use of hydraulic fluid.

[CGFR 68-82, 33 FR 18878, Dec. 18, 1968, as amended by CGFR 69-127, 35 FR 9980, June 17, 1970; USCG-1999-5151, 64 FR 67180, Dec. 1, 1999]

#### § 58.30-15 Pipe, tubing, valves, fittings, pumps, and motors.

(a) The requirements of this section are applicable to those hydraulic and pneumatic systems listed in § 58.30-1.

(b) Materials used in the manufacture of tubing, pipes, valves, flanges, and fittings shall be selected from those specifications which appear in Table 56.60-1(a) or Table 56.60-2(a) of this subchapter; or they may be selected from the material specifications of sections I, III, and VIII of the ASME Code if not prohibited by the section of this subchapter dealing with the particular section of the ASME Code. Materials designated by other specifications shall be evaluated on the basis of physical and chemical properties. To assure these properties, the specifications shall specify and require such physical and chemical testing as considered necessary by the Commandant. All tubing and pipe materials shall be suitable for handling the hydraulic fluid used and shall be of such chemical and physical properties as to remain ductile at the lowest operating temperature.

(c) Bolting shall meet the requirements of § 56.25-20 of this subchapter except that regular hexagon bolts conforming to SAE J429, grades 2 through 8, or ASTM A 193 (incorporated by reference, see § 58.03-1) may be used in sizes not exceeding 1 1/2 inches.

(d) The maximum allowable working pressure and minimum thickness shall be calculated as required by § 56.07-10(e) of this subchapter when the outside diameter to wall thickness ratio is greater than 6. Where the ratio is less than

6, the wall thickness may be established on the basis of an applicable thick-wall cylinder equation acceptable to the Commandant using the allowable stress values specified in § 56.07-10(e) of this subchapter.

(e) All flared, flareless and compression type joints shall be in accordance with § 56.30-25 of this subchapter.

(f) Fluid power motors and pumps installed on vessels subject to inspection shall be certified by the manufacturer as suitable for the intended use. Such suitability shall be demonstrated by operational tests conducted aboard the vessel which shall be witnessed by a marine inspector.

[CGFR 68-82, 33 FR 18878, Dec. 18, 1968, as amended by CGD 73-254, 40 FR 40168, Sept. 2, 1975; CGD 95-027, 61 FR 26001, May 23, 1996; USCG-2000-7790, 65 FR 58460, Sept. 29, 2000]

#### § 58.30-20 Fluid power hose and fittings.

(a) The requirements of this section are applicable to those hydraulic and pneumatic systems listed in § 58.30-1.

(b) Hose and fittings shall meet the requirements of subpart 56.60 of this subchapter.

(c) Hose assemblies may be installed between two points of relative motion but shall not be subjected to torsional deflection (twisting) under any conditions of operation and shall be limited, in general, to reasonable lengths required for flexibility. Special consideration may be given to the use of longer lengths of flexible hose where required for proper operation of machinery and components in the hydraulic system.

(d) Sharp bends in hoses shall be avoided.

#### § 58.30-25 Accumulators.

(a) An accumulator is an unfired pressure vessel in which energy is stored under high pressure in the form of a gas or a gas and hydraulic fluid. Accumulators must meet the applicable requirements in § 54.01-5 (c)(3), (c)(4), and (d) of this chapter or the remaining requirements in part 54.

(b) If the accumulator is of the gas and fluid type, suitable separators shall be provided between the two media, if their mixture would be dangerous, or would result in contamination

tion of the hydraulic fluid and loss of gas through absorption.

(c) Each accumulator which may be isolated, shall be protected on the gas and fluid sides by relief valves set to relieve at pressures not exceeding the maximum allowable working pressures. When an accumulator forms an integral part of systems having relief valves, the accumulator need not have individual relief valves.

[CGFR 68-82, 33 FR 18878, Dec. 18, 1968 as amended by CGD 77-147, 47 FR 21811, May 20, 1982]

#### § 58.30-30 Fluid power cylinders.

(a) The requirements of this section are applicable to those hydraulic and pneumatic systems listed in § 58.30-1 and to all pneumatic power transmission systems.

(b) Fluid power cylinders consisting of a container and a movable piston rod extending through the containment vessel, not storing energy but converting a pressure to work, are not considered to be pressure vessels and need not be constructed under the provisions of part 54 of this subchapter.

(c) Cylinders shall be designed for a bursting pressure of not less than 4 times the maximum allowable working pressure. Drawings and calculations or a certified burst test report shall be submitted to show compliance with this requirement.

(d) Piston rods, except steering gear rams, shall either be of corrosion resistant material or shall be of steel protected by a plating system acceptable to the Commandant.

(e) Materials selection shall be in accordance with the requirements of § 58.30-15(b).

#### § 58.30-35 Testing.

(a) All fluid power and control systems and components thereof shall be tested as required by this section.

(b) Accumulators constructed as pressure vessels under the provisions of part 54 of this subchapter shall be tested and retested as required by parts 54 and 61 of this subchapter.

(c) Fluid power and control systems and piping assemblies shall be given an installation test as follows:

(1) Fluid power and control systems and piping assemblies and associated